Pushing the Envelope			
2009 Science			
Core Curriculum			
Iowa Science			
Grades 3-5			
Activity/Lesson	**State**	**Standards**	
Types of Engines (pgs. 11-23)	IA	SCI.3-5.3.5.1	Understand and apply knowledge of how forces are related to an object's motion. The motion of an object can be described by its position, direction of motion, and speed. That motion can be measured and represented on a graph.
Types of Engines (pgs. 11-23)	IA	SCI.3-5.3.5.2	Understand and apply knowledge of how forces are related to an object's motion. Changes in speed or direction of motion are caused by forces. The greater the force, the greater the change in motion. The more massive an object, the less effect a given force will have in changing its motion.
Chemistry (pgs. 25-41)	IA	SCI.3-5.2.1.1	The different physical and chemical properties of earth materials make them useful in different ways, for example, as building materials, as sources of fuel, or for growing the plants we use as foods.
Chemistry (pgs. 25-41)	IA	SCI.3-5.3.1.2	Understand and apply knowledge of how to describe and identify substances based on characteristic properties. A substance has characteristic properties. A mixture of substances often can be separated into the original substances using one or more of the characteristic properties.
Physics and Math (pgs. 43-63)	IA	SCI.3-5.3.5.2	Understand and apply knowledge of how forces are related to an object's motion. Changes in speed or direction of motion are caused by forces. The greater the force, the greater the change in motion. The more massive an object, the less effect a given force will have in changing its motion.

Pushing the Envelope			
2009 Science			
Core Curriculum			
Iowa Science			
Grades 6-8			
Activity/Lesson	**State**	**Standards**	
Types of Engines (pgs. 11-23)	IA	SCI.6-8.3.3.1	Understand and apply knowledge of motions and forces. The motion of an object can be described by its position, direction of motion, and speed. That motion can be measured and represented on a graph.

Types of Engines (pgs. 11-23)	IA	SCI.6-8.3.3.3	Understand and apply knowledge of motions and forces. If more than one force acts on an object along a straight line, then the forces will reinforce or cancel one another, depending on their direction and magnitude. Unbalanced forces will cause changes in speed or direction of an object's motion.
Chemistry (pgs. 25-41)	IA	SCI.6-8.3.1b.2	Physical and chemical changes and their relationship to the conservation of matter and energy. Substances react chemically in characteristic ways with other substances to form new substances (compounds) with different characteristic properties. In chemical reactions, the total mass is conserved. Substances often are placed in categories or groups if they react in similar ways; metals is an example of such a group.
Physics and Math (pgs. 43-63)	IA	SCI.6-8.3.3.2	Understand and apply knowledge of motions and forces. An object that is not being subjected to a force will continue to move at a constant speed and in a straight line.
Physics and Math (pgs. 43-63)	IA	SCI.6-8.3.3.3	Understand and apply knowledge of motions and forces. If more than one force acts on an object along a straight line, then the forces will reinforce or cancel one another, depending on their direction and magnitude. Unbalanced forces will cause changes in speed or direction of an object's motion.
Rocket Activity (pgs. 69-75)	IA	SCI.6-8.3.3.2	Understand and apply knowledge of motions and forces. An object that is not being subjected to a force will continue to move at a constant speed and in a straight line.
Rocket Activity (pgs. 69-75)	IA	SCI.6-8.3.3.3	Understand and apply knowledge of motions and forces. If more than one force acts on an object along a straight line, then the forces will reinforce or cancel one another, depending on their direction and magnitude. Unbalanced forces will cause changes in speed or direction of an object's motion.
Pushing the Envelope			
2009 Science			
Core Curriculum			
Iowa Science			
Grades 9-12			
Activity/Lesson	**State**	**Standards**	

Physics and Math (pgs. 43-63)	IA	SCI.9-12.3.3.5	Objects change their motion only when a net force is applied. Laws of motion are used to calculate precisely the effects of forces on the motion of objects. The magnitude of the change in motion can be calculated using the relationship F = ma, which is independent of the nature of the force. Whenever one object exerts force on another, a force equal in magnitude and opposite in direction is exerted on the first object.
Rocket Activity (pgs. 69-75)	IA	SCI.9-12.3.3.5	Objects change their motion only when a net force is applied. Laws of motion are used to calculate precisely the effects of forces on the motion of objects. The magnitude of the change in motion can be calculated using the relationship F = ma, which is independent of the nature of the force. Whenever one object exerts force on another, a force equal in magnitude and opposite in direction is exerted on the first object.